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LIST OF ABBREVIATIONS

B. bifidum	*Bifidobacterium bifidum*
B. longum	*Bifidobactrium longum*
C	Degree Celsius
cfu /g	Colony forming unit /gram
E. coli	*Escherichia coli*
EMB	Eocin Methylene Blue
FOS	Fructooligosaccharide
GIT	Gastrointestinal tract
hr	Hour
L. bulgaricus	*Lactobacillus delbrueckii subspp. bulgaricus*
MIRCEN	Microbiological Resource Centre – Faculty of Agriculture – Ain Shams - University
ml	Milliliter
MRS	De Man Rogosa Sharpe media
NaOH	Sodium hydroxide
NPNL	Nalidexic acid , Paromomycin sulphate , Neomycin sulphate , Lithium chloride
pH	Hydrogen ions concentration
S. aureus	*Staphylococcus aureus*

spp.	Species
S. thermophilus	*Streptococcus salivarius subspp. thermophilus*
Y. cultures	Yoghurt cultures

SUMMARY

Consumption of probiotic bacteria via food products is an ideal way to reestablish the intestinal microflora balance. Different types of food products were proposed as a carrier for probiotic microorganisms mainly fermented dairy products.

The current investigation aimed to study Bifidus yoghurt quality

Three types of yoghurt were prepared standard yoghurt (Y) made with yoghurt cultures (3%), Bifidus yoghurt (B) made with 1.5% yoghurt cultures +1.5% *B. bifidum* and Bifidus yoghurt (L) made with 1.5% yoghurt cultures + 1.5% *B. longum*

Samples were taken from milk immediately before incubation, after coagulation and during storage at 4ºC. Coagulation time changed according to starter culture as Y sample had the shortest coagulation time (3:30 hr: min.) followed by L sample (4:45 hr:min.) with an increase of 35:71 % then B sample recorded (5:15 hr:min.) with an increase of 50% in its coagulation time.

Y sample had the highest acidity among the prepared yoghurt samples when it was fresh and along the storage period as it recorded 1.12 and 1.42 after 7 and 14 day, respectively. While B and L samples had lower acidity (0.89, 0.92) and (0.92, 1.08), respectively. Even after 21 days, there acidity still not high as they recorded 1.02 and 1.2 in B and L samples, respectively.

The organoleptic examination of prepared yoghurt during storage period revealed that Y sample had the highest score points 95.3 when it was fresh compared to 93.2 and 94.0 in fresh B and L samples, then during storage it decreased to be 86.3 and 78.0 after 7 and 14 days of storage, respectively, while the scores of B and L sample slightly increased by cold storage to be 93.8 and 94.2 on the 1st day then their scores decreased gradually but became higher than that of Y sample as they gained scores of (89.8 , 90.3) and (88.8, 89.7) after 14 and 21 days, respectively and maintained there high scores till the end of storage period .

Their microbiological examination revealed that the count of *S. thermophilus* increased significantly during the coagulation and storage periods in all types of prepared yoghurt from 8.58, 8.3 and 8.39 $\log_{10}$ cfu /g to be 9.36, 9.2 and 9.22 $\log_{10}$ cfu /g after 3 days in Y, B and L samples, respectively. Thereafter, it began to decrease gradually and its counts became 7.71, 7.4 and 7.39 $\log_{10}$ cfu /g after 14 days of storage, respectively.

L . bulgaricus also increased during the coagulation and storage times from 8.7 , 8.2 and 8.39 $\log_{10}$ cfu /g to be 9.8 , 9.56 and 9.42 $\log_{10}$ cfu /g on the 1st day of storage of Y, B and L samples, respectively and maintained its high levels till the 5th day of storage. Then began to decrease to be 8.4, 7.33 and 7.47 $\log_{10}$ cfu /g on the day 14.

Both *Bifidobacteria spp*. population slightly increased during the coagulation time, while they sharply increased through the first days of cold storage to reach there maximum counts 9.6 and 9.7 $\log_{10}$ cfu /g on the 3rd day of storage, then they decreased gradually. *B. bifidum* showed a rapid reduction in its count from the 5th day of storage, while *B. longum* began to decrease after 7 days. After 21 days; their counts became within the recommended therapeutic level as they recorded 6.74 and 6.97 $\log_{10}$ cfu /g in B and L samples, respectively.

Yeast and mould could not be detected in all prepared yoghurt samples after the coagulation process, while they were detected in Y sample after 9 days of cold storage with a mean counts 1.8 $\log_{10}$ cfu/g and increased to be 2.74 $\log_{10}$cfu /g after 14 days of storage, While they were detected in both B and L samples with mean counts 1.39 and 1.44 $\log_{10}$ cfu /g then they reached to 1.92 and 1.78 $\log_{10}$cfu /g after 21 days, respectively .

All examined prepared yoghurt samples either fresh or stored samples were free from coliforms.

B and L samples were prepared as before and B+FOS and L+FOS samples were prepared (with 1.5% FOS), then samples were taken from inoculated milk, after coagulation and during storage period for counting of *Bifidobacteria* spp.

Count of *B. bifidum* increased during coagulation and storage periods in both B and B+FOS samples, but with addition of FOS the count was higher, then decreased gradually as the storage period advanced to be 7.17 and 8.92 log_{10}cfu /g and 6.92 and 8.17 log_{10}cfu /g after 14 and 21 days of storage, respectively. While *B. longum* population showed rapid increase during coagulation and storage periods, mainly with addition of FOS, from 8.39 and 8.17 log_{10} cfu /g to be 9.07 and 9.47 log_{10} cfu /g on the 1^{st} day of storage and reached to its maximum levels after 3 days with mean counts of 9.54 and 9.47 log_{10} cfu /g in L and L+FOS, respectively.

Y, B and L yoghurt sample were prepared as mentioned before with sterilized milk previously infected with known numbers of *E. coli* and *S. aureus* microorganism separately. Samples were taken from infected milk then after coagulation and during storage period for bacteriological examination.

Count of *E. coli* increased in all examined Y, B and L samples during the coagulation period from 6.3 log_{10} cfu /g to be 7.65, 7.54 and 7.47 log_{10} cfu /g after 3 days of cold storage, respectively then its counts began to decrease gradually but the decrease was faster in B and L samples than that in Y sample until complete disappearance after 11 days in B and L samples, while in Y sample the decay of *E. coli* count was slower and disappeared after 14 days of cold storage.

In Bifidus yoghurt samples (B, L); *S. aureus* count decreased rapidly during the coagulation and cold storage periods from 6.7 $\log_{10}$ cfu /g into 4.39 and 3.3 $\log_{10}$ cfu /g after 3 days, respectively then disappeared completely from L sample on the 4th day of storage and on the 5th day for B sample, while in Y sample the count decreased gradually till the undetectable level after 7 days of storage.

B and L samples with 1.5% FOS were prepared and another Bifidus yoghurt samples infected with *E. coli* and *S. aureus* microorganisms separately, then all products were incubated at 40ºC and stored in refrigerator. Samples were taken from inoculated milk, fresh samples and stored yoghurt samples and bacteriologically examined.

Count of *E. coli* increased during coagulation period in all samples and continued during cold storage then began to decrease rapidly in B+FOS samples from 6.39 $\log_{10}$cfu/g into 5.39 and 2.92 $\log_{10}$ cfu /g after 3 and 7days, respectively and completely disappeared after 9 days, while in B sample the count of *E. coli* still high till the 3rd day with a mean count of 6.47 $\log_{10}$cfu/g and decreased gradually to 4.54 $\log_{10}$cfu/g on the 7th day of storage to be undetectable after 11days of storage.

In L+FOS sample; the count of *E. coli* increased during coagulation process only and began to decrease from the 1st day of storage to be 2.17 log_{10} cfu /g after 7 days of storage and disappeared on the 9th day of storage compared to gradual reduction in its count in L sample into 4.6 log_{10}cfu/g after 7 days of storage followed by complete disappearance after 11 days.

The mean count of *S. aureus* in both B+FOS and L+FOS showed rapid decrease during the time of coagulation from 6.9 and 6.8 log_{10} cfu /g to be 6.5 and 6.1 log_{10}cfu /g, respectively, and its rapid reduction continued and its mean counts became 2.1 log_{10}cfu/g in B+FOS sample and to 2.3 log_{10}cfu/g in L+FOS sample after 3 days of storage, respectively and not detected in both samples on the 4th day of storage. While in B and L samples *S. aureus* counts decreased to be 4.1 and 3.6 log_{10} cfu/g after 3 days of storage, respectively and disappeared on the 5th day of storage.